

CLAIMS:

1. A vehicular diagnostic method in which a vehicle and a center are connected so as to be able to communicate with each other, the vehicle transmits information regarding a failure in the vehicle to the center, and the center diagnoses the failure which has occurred in the vehicle based on the information regarding the failure transmitted from the vehicle, wherein

the vehicle determines whether a failure has occurred in a device mounted in the vehicle; when determining that the failure has occurred, the vehicle transmits first failure information indicating occurrence of the failure to the center; and after transmitting the first failure information to the center, the vehicle collects details regarding the failure, and transmits second failure information indicating the collected details regarding the failure to the center.

2. A vehicular diagnostic method in which a vehicle and a center are connected so as to be able to communicate with each other, the vehicle transmits information regarding a failure in the vehicle to the center, and the center diagnoses the failure which has occurred in the vehicle based on the information regarding the failure transmitted from the vehicle, wherein

the vehicle determines whether a failure has occurred in a device mounted in the vehicle, and when determining that the failure has occurred, the vehicle transmits first failure information indicating occurrence of the failure to the center;

the center receives the first failure information transmitted from the vehicle, and transmits first countermeasure information indicating countermeasures for the occurrence of the failure corresponding to the received first failure information;

the vehicle receives the first countermeasure information transmitted from the center, notifies a user of the vehicle of countermeasures indicated in the first countermeasure information based on the first countermeasure information, collects details regarding the failure, and transmits second failure information indicating the collected details regarding the failure;

the center receives the second failure information transmitted from the vehicle, checks the specifics regarding the failure based on the received second failure information, and transmits second countermeasure information indicating detailed countermeasures for the failure corresponding to the second failure information to the vehicle; and

the vehicle receives the second countermeasure information transmitted from the center, and notifies the user of the vehicle of the detailed countermeasures indicated in the second countermeasure information based on the second countermeasure information.

5 3. The vehicular diagnostic method according to claim 2, wherein

 a computer which is connected to a network so as to be able to communicate with the center is provided in an automobile dealer which performs servicing of the vehicle,

 the center transmits the first failure information and the second failure information transmitted from the vehicle to the computer, and

10 the computer prepares the first countermeasure information corresponding to the first failure information transmitted from the center and the second countermeasure information corresponding to the second failure information transmitted from the center, and transmits the prepared first countermeasure information and the second countermeasure information to the center.

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4. The vehicular diagnostic method according to any one of claims 1 to 3, wherein

 a determination of whether the failure has occurred in the device mounted in the vehicle is made based on whether an alarm lamp, which illuminates when an abnormality has occurred in the device mounted in the vehicle, illuminates, and the first failure information

20 is alarm lamp illumination information which indicates that the alarm lamp has illuminated.

5. The vehicular diagnostic method according to any one of claims 1 to 4, wherein

25 the details regarding the failure indicated in the second failure information include at least one of information indicating results of detection performed by various sensors mounted in the vehicle, information indicating an operation state of the device mounted in the vehicle, and information indicating a result of self-diagnosis performed by the device mounted in the vehicle.

30 6. The vehicular diagnostic method according to any one of claims 1 to 5, wherein

 the center transmits transmission request information for requesting the vehicle to transmit the second failure information, after receiving the first failure information from the vehicle; and

 the vehicle receives the transmission request information transmitted from the center,

and transmits the second failure information to the center in response to the received transmission request information.

7. The vehicular diagnostic method according to any one of claims 1 to 6, wherein
5 the vehicle determines whether the vehicle is running, and prohibits collection of at least the details regarding the failure indicated in the second failure information when determining that the vehicle is running.
8. The vehicular diagnostic method according to claim 7, wherein
10 the vehicle starts collection of the details regarding the failure indicated in the second failure information according to a predetermined operation performed by the user of the vehicle, when determining that the vehicle is stopped.
9. The vehicular diagnostic method according to claim 8, wherein
15 the predetermined operation performed by the user of the vehicle is an operation performed by the user for directing start of the collection of the details regarding the failure indicated in the second failure information.
10. The vehicular diagnostic method according to claim 8, wherein
20 the predetermined operation performed by the user of the vehicle is an operation of operating means in which a function for directing start of the collection of the details regarding the failure indicated in the second failure information is set in advance.
11. The vehicular diagnostic method according to any one of claims 1 to 10, wherein
25 the details regarding the failure to be collected are only details related to the occurrence of the failure indicated in the first failure information.
12. The vehicular diagnostic method according to any one of claims 1 to 11, wherein
30 the vehicle transmits the first failure information at intervals each of which is at least a predetermined period of time, when transmitting the first failure information to the center two or more times.
13. The vehicular diagnostic method according to any one of claims 1 to 11, wherein
the center receives the first failure information at intervals each of which is at least a

predetermined period of time, when receiving the first failure information from the vehicle two or more times.

14. The vehicular diagnostic method according to any one of claims 1 to 13, wherein

5 the vehicle transmits the second failure information at intervals each of which is at least a predetermined period of time, when transmitting the second failure information related to the same first failure information to the center two or more times.

15. The vehicular diagnostic method according to any one of claims 1 to 13, wherein

10 the center receives the second failure information at intervals each of which is at least a predetermined period of time when receiving the second failure information related to the same first failure information from the vehicle two or more times.

16. The vehicular diagnostic method according to any one of claims 1 to 15, wherein

15 the center accumulates and stores at least the first failure information from among the first failure information and the second failure information transmitted from the vehicle, and provides at least the first failure information from among the accumulated and stored first failure information and second failure information, in response to a request from an external terminal device.

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17. A vehicular diagnostic system, in which a vehicle and a center are connected so as to be able to communicate with each other, the vehicle transmits information regarding a failure in the vehicle to the center, and the center diagnoses the failure which has occurred in the vehicle based on the information regarding the failure transmitted from the vehicle, wherein

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the vehicle comprises:

failure detecting means for detecting a failure which has occurred in a device mounted in the vehicle;

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failure information outputting means for obtaining and outputting failure information indicating the failure detected by the failure detecting means;

failure information collecting means for collecting failure detailed information indicating details regarding the failure detected by the failure detecting means;

failure notifying means for obtaining the failure information output from the failure information outputting means, and for notifying a user of the failure information; and

vehicle communication means for transmitting the failure information output from the failure information outputting means and the failure detailed information collected by the failure information collecting means to the center, and for receiving information related to the failure which has occurred in the device from the center, and

5 the center comprises:

center communication means for receiving the failure information and the failure detailed information transmitted from the vehicle and for transmitting information regarding the failure indicated in the received failure information and the failure detailed information to the vehicle;

10 failure specifics checking means for checking specifics of the failure based on the failure information and the failure detailed information received by the center communication means;

countermeasure information preparing means for preparing countermeasure information indicating countermeasures for the specifics of the failure checked by the failure specifics
15 checking means; and

storing means for accumulating and storing at least the failure information from among the failure information and the failure detailed information received by the center communication means.

20 18. The vehicular diagnostic system according to claim 17, wherein

the failure detecting means of the vehicle is an alarm lamp illumination device mounted in the vehicle.

19. The vehicular diagnostic system according to claim 17 or 18, wherein

25 the details indicated in the detailed information include at least one of information indicating results of detection performed by various sensors mounted in the vehicle, information indicating an operation state of the device mounted in the vehicle, and information indicating a result of self-diagnosis performed by the device mounted in the vehicle.

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20. A vehicle whose failure that has occurred is diagnosed by transmitting predetermined information to a device outside of the vehicle, comprising:

failure detecting means for detecting a failure which has occurred in a device mounted in the vehicle;

failure information outputting means for obtaining and outputting failure information indicating the failure detected by the failure detecting means;

failure information collecting means for collecting failure detailed information indicating details regarding the failure detected by the failure detecting means;

5 failure notifying means for obtaining the failure information output from the failure information outputting means and for notifying a user of the failure information; and

communication means for transmitting the failure information output from the failure information outputting means and the failure detailed information collected by the failure information collecting means to the device outside of the vehicle, and for receiving
10 information related to the failure which has occurred in the device from the device outside of the vehicle.

21. The vehicle according to claim 20, wherein

the failure detecting means of the vehicle is an alarm lamp illumination device mounted
15 in the vehicle.

22. The vehicle according to claim 20 or 21, wherein

the details indicated in the failure detailed information include at least one of information indicating results of detection performed by various sensors mounted in the
20 vehicle, information indicating an operation state of the device mounted in the vehicle, and information indicating a result of self-diagnosis performed by the device mounted in the vehicle.

23. A center which receives predetermined information from a vehicle and diagnoses a
25 failure that has occurred in the vehicle, comprising:

communication means for receiving failure information indicating a failure that has occurred in the vehicle, which is transmitted from the vehicle, and failure detailed information indicating details regarding the failure, which is transmitted from the vehicle, and for transmitting information regarding the failure indicated in the received failure
30 information and the failure detailed information to the vehicle;

failure specifics checking means for checking specifics of the failure based on the failure information and the failure detailed information received by the communication means;

countermeasure information preparing means for preparing countermeasure information

indicating countermeasures for the specifics of the failure checked by the failure specifics checking means; and

storing means for accumulating and storing at least the failure information from among the failure information and the failure detailed information which are received by the
5 communication means.

24. The center according to claim 23, wherein

the details indicated in the failure detailed information include at least one of
information indicating results of detection performed by various sensors mounted in the
10 vehicle, information indicating an operation state of the device mounted in the vehicle, and
information indicating a results of self-diagnosis performed by the device mounted in the
vehicle.